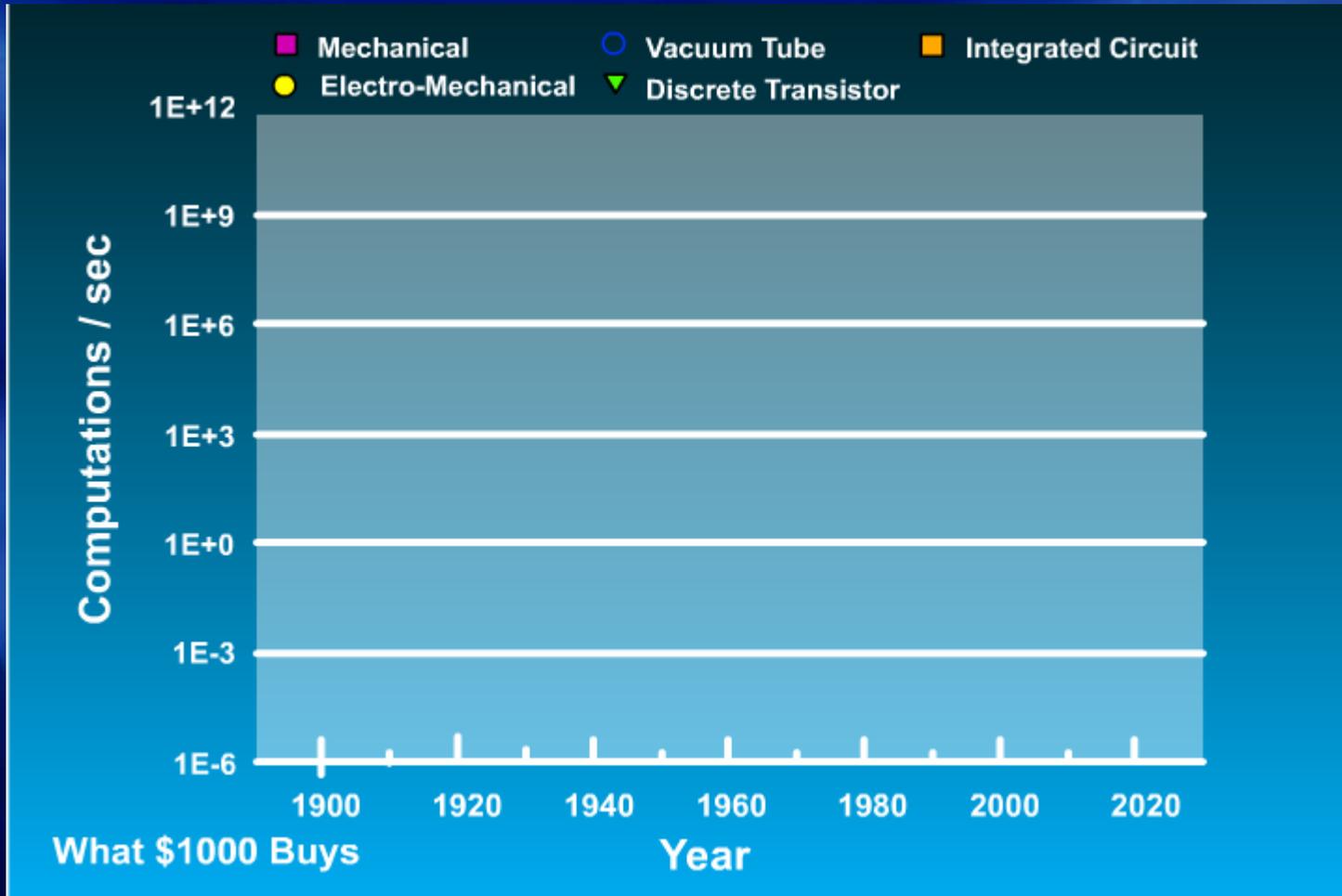


The Next DARPA Revolution: Integrated MicroSYSTEMS

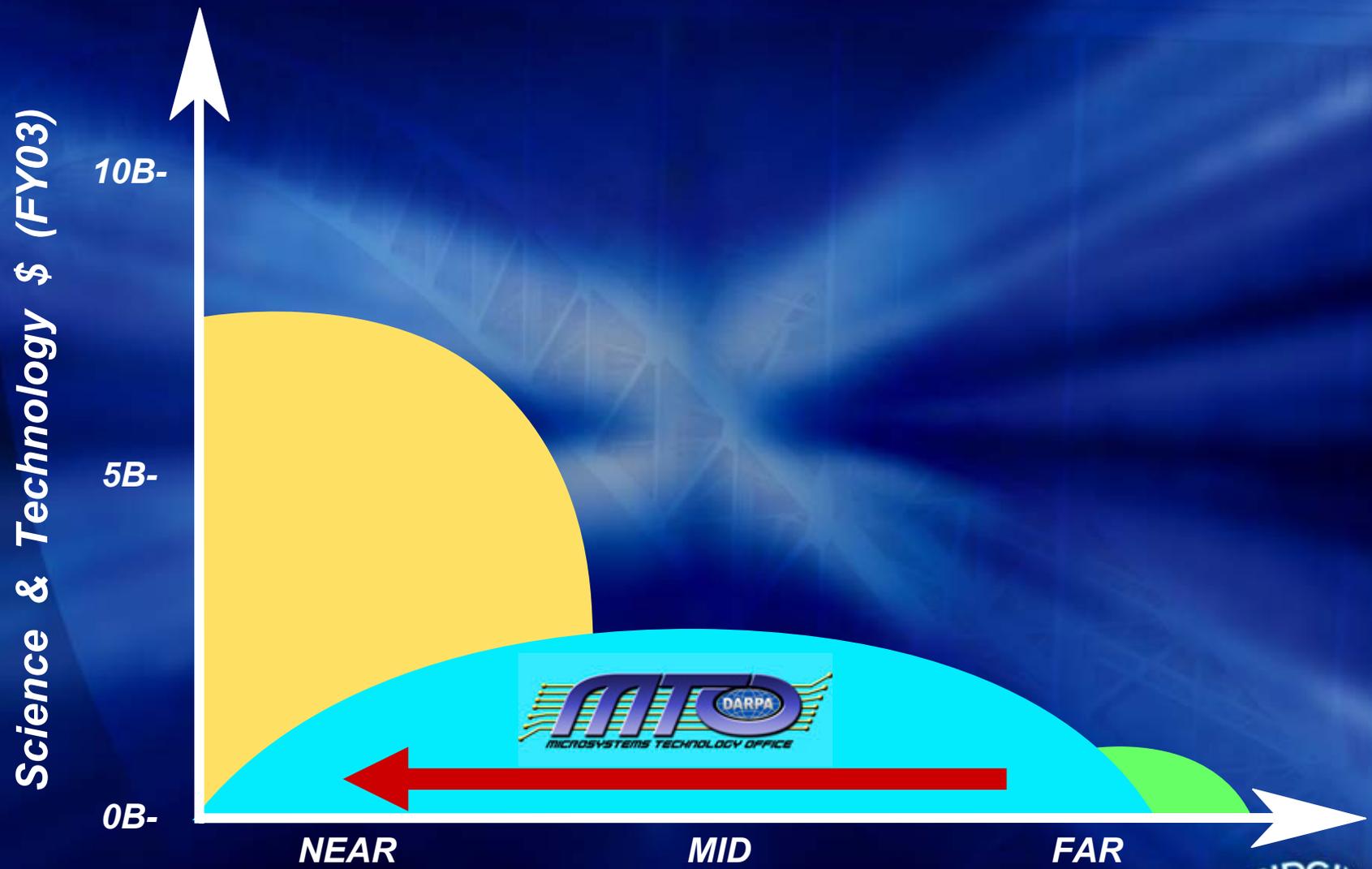
Zachary J. Lemnios
Director, DARPA/MTO



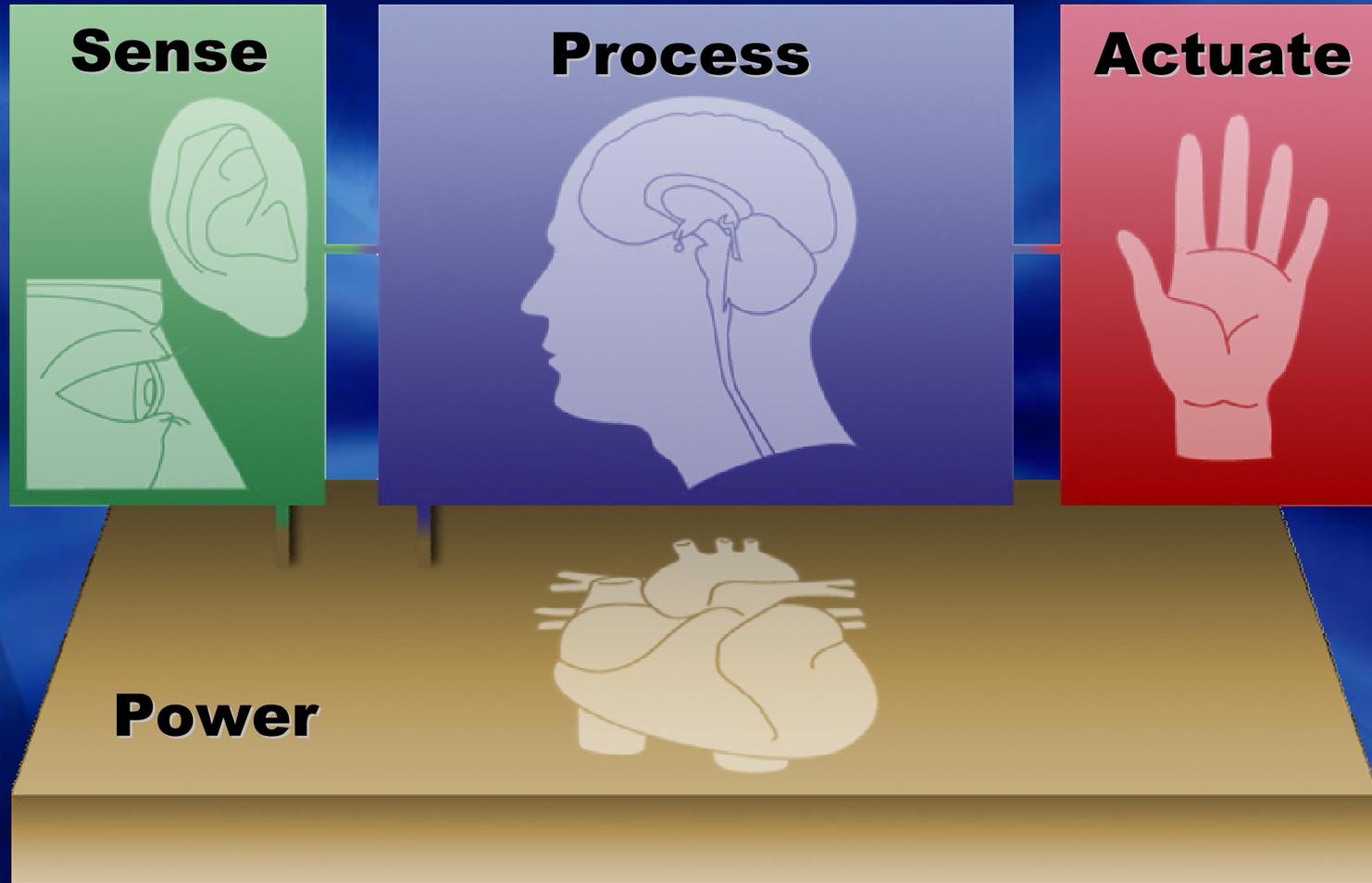
The Next Revolution: The Integrated Microsystem



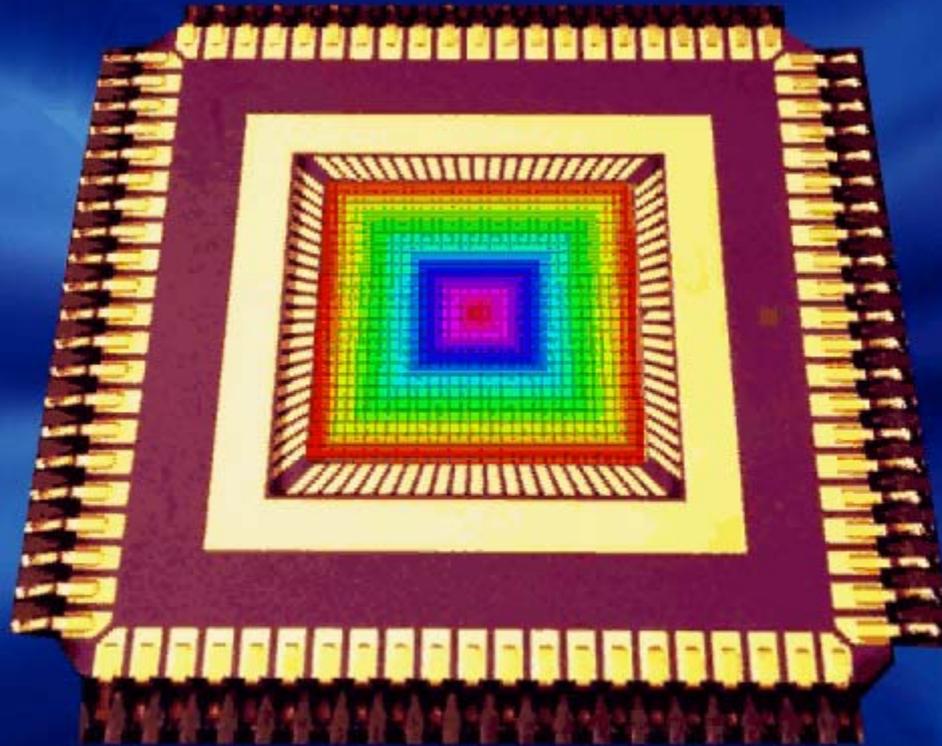




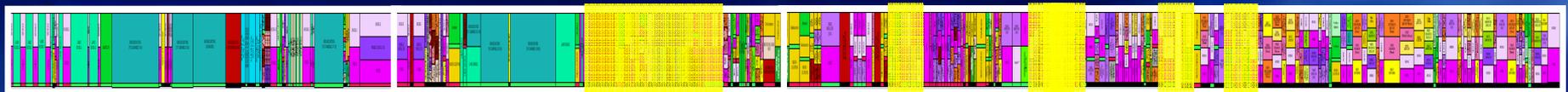
Microsystem Architecture



Adaptive Focal Plane Array



Flexible Receiver



30 MHz

300 MHz

3 GHz

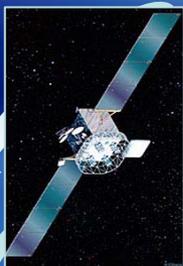
30 GHz

300 GHz

ACN



GBS



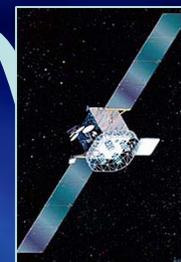
DSCS



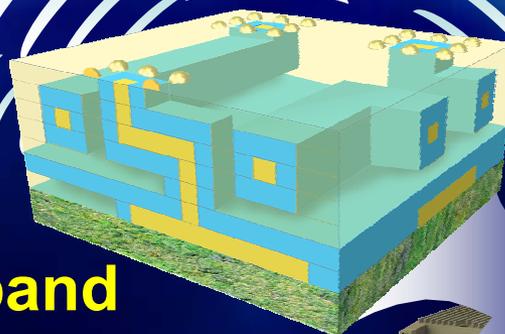
MILSTAR



Gap Filler



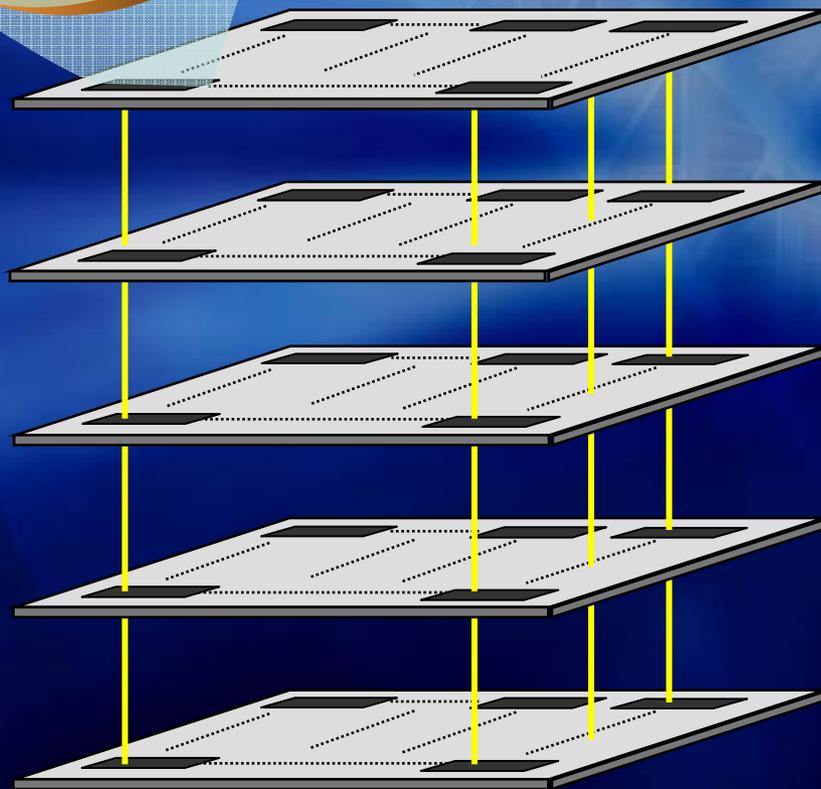
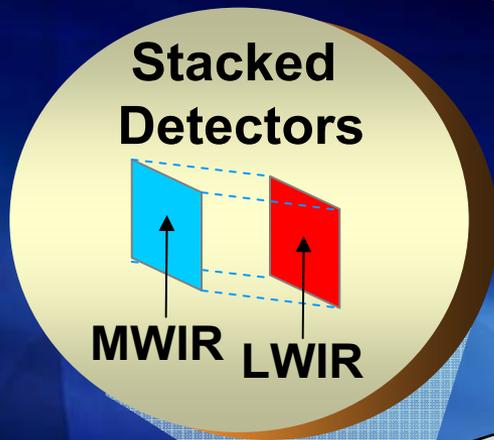
3D Multiband Receiver Chip



Intelligent Radio Frequency Identification (RFID)



Vertical Interconnected Sensor Arrays



IR detector array

Preamplifier, Digitize MSB

Mixed Signal Layer

LSB ADC

DSP



Invention of the Integrated Circuit in 1958

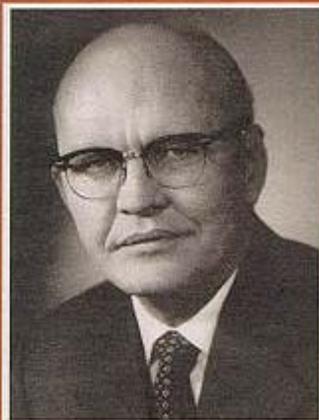
Kilby Wins the Nobel

Integrated circuit inventor honored 40 years later



BY HEIDI ELLIOTT

Inventor. Patent holder. Distinguished professor. And, now, Jack Kilby can add Nobel Laureate to the list of his accomplishments.



Kilby in 1958, the year he invented the world's first integrated circuit while working at Texas Instruments.

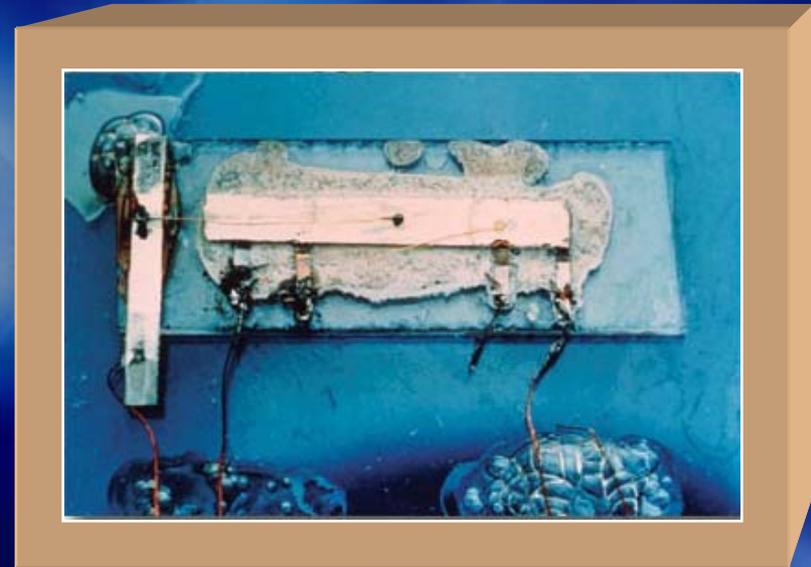
Last week the Royal Swedish Academy of Sciences announced that Kilby would share half of this year's Nobel Prize in Physics for his part in the invention of the integrated circuit.

Kilby shares the prize, worth nearly \$1 million, with Zhores I. Alferov of the A.F. Ioffe Physico-Technical Institute, St. Petersburg, Russia, and Herbert Kroemer of the University of California at Santa Barbara, Calif., who were cited for developing semiconductor heterostructures used in high-speed and opto-electronics.

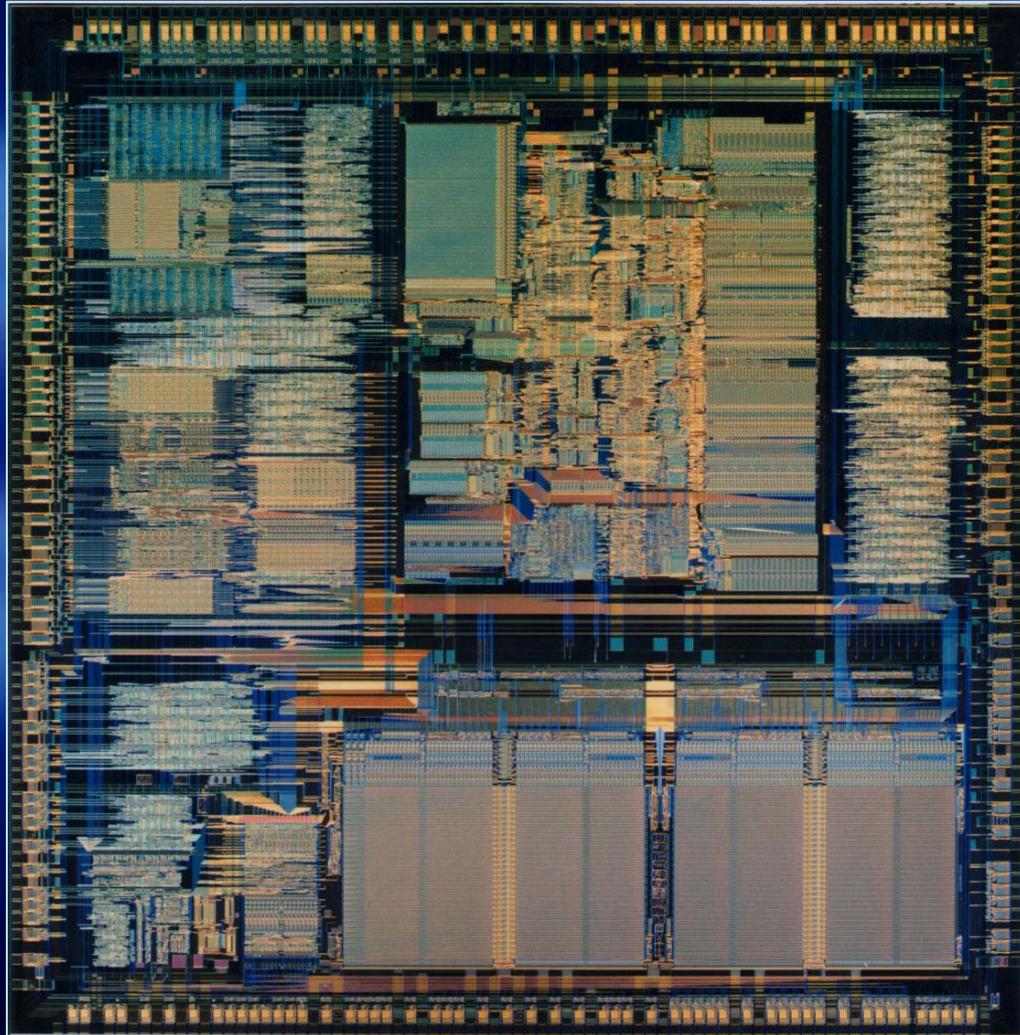
"Jack S. Kilby is being rewarded for his part in the invention and development of the integrated circuit, the chip. Through this invention microelectronics has grown to become the basis of all modern technology," said the Royal Swedish Academy of Sciences in announcing the Nobel prizes in Physics.

"Examples are powerful computers and processors, which collect and process data and control everything from washing machines and cars to space probes and medical diagnostic equipment such as computer tomographs and magnetic-resonance cameras. The microchip has also led to our environment being flooded with small electronic apparatuses, anything from electronic watches and television games to minicalculators and personal computers."

Born in 1923, Kilby joined Texas Instruments Inc. in 1958 as an engineer, having earned a bachelor's degree in electrical engineering from the University of Illinois and a master's degree in electrical engineering from the University of Wisconsin. On Sept. 12, 1958, he successfully demonstrated the first electronic circuit that



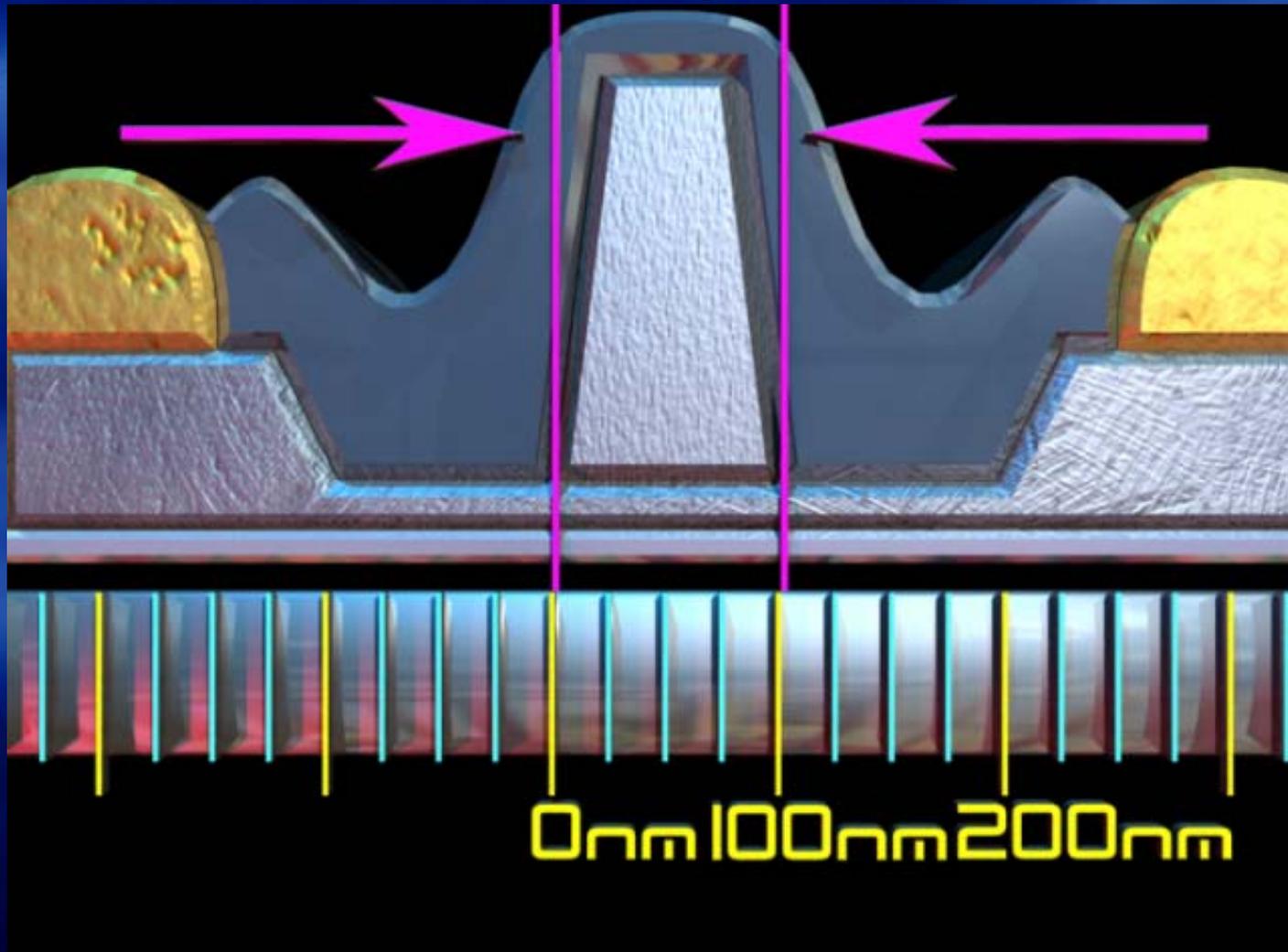
VLSI transition



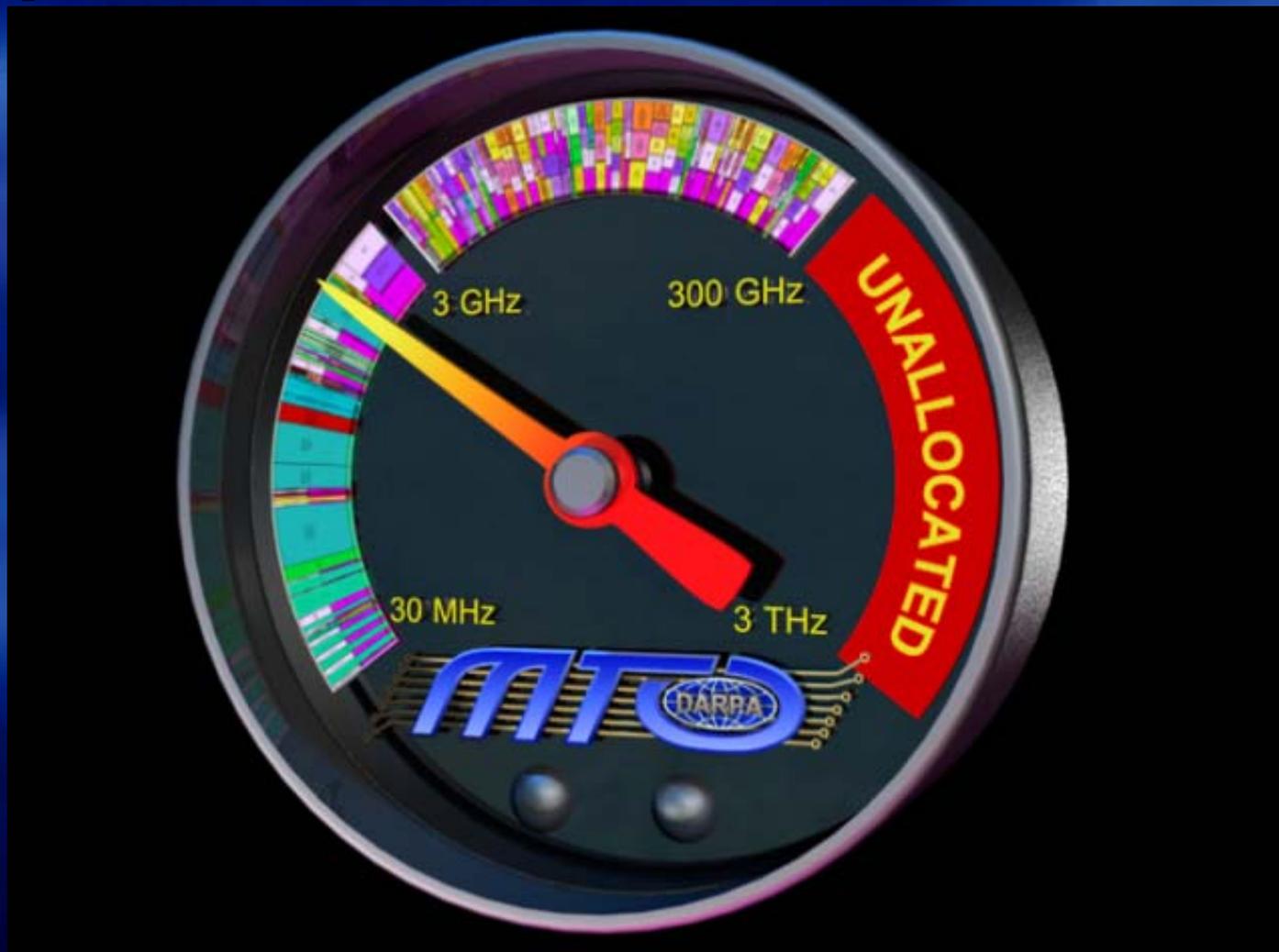
MIMIC Program to Consumer Electronics



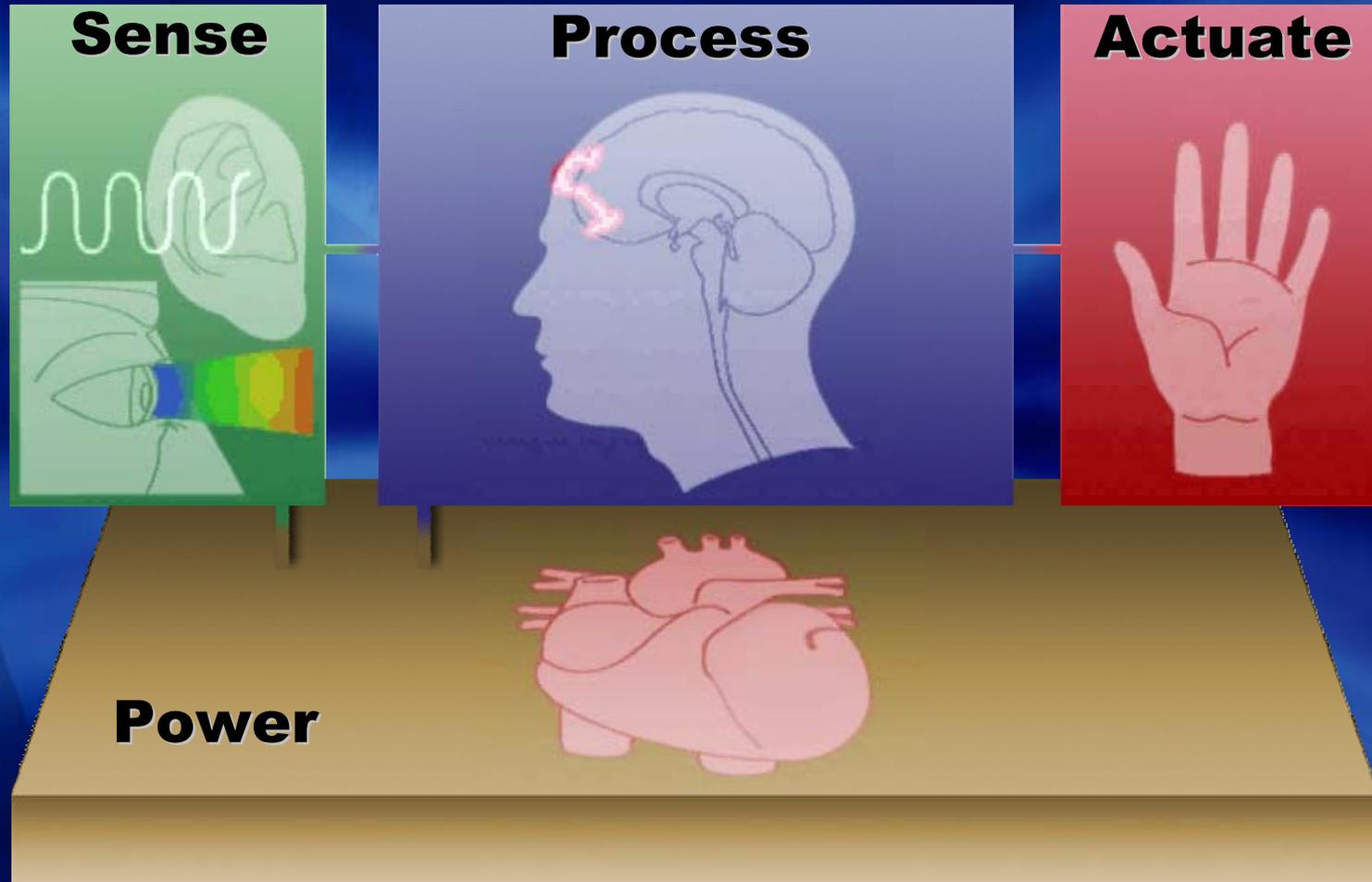
Pushing the Limits of Scaling and Integration



Microsystems for Spectral Exploitation and Sensor Dominance



Microsystem Architecture





LEVERAGE PERFORMANCE AT LIMITS OF SCALING AND INTEGRATION



LEVERAGE PERFORMANCE AT LIMITS OF SCALING AND INTEGRATION

EXPLOIT UNTAPPED REGIONS OF THE SPECTRUM



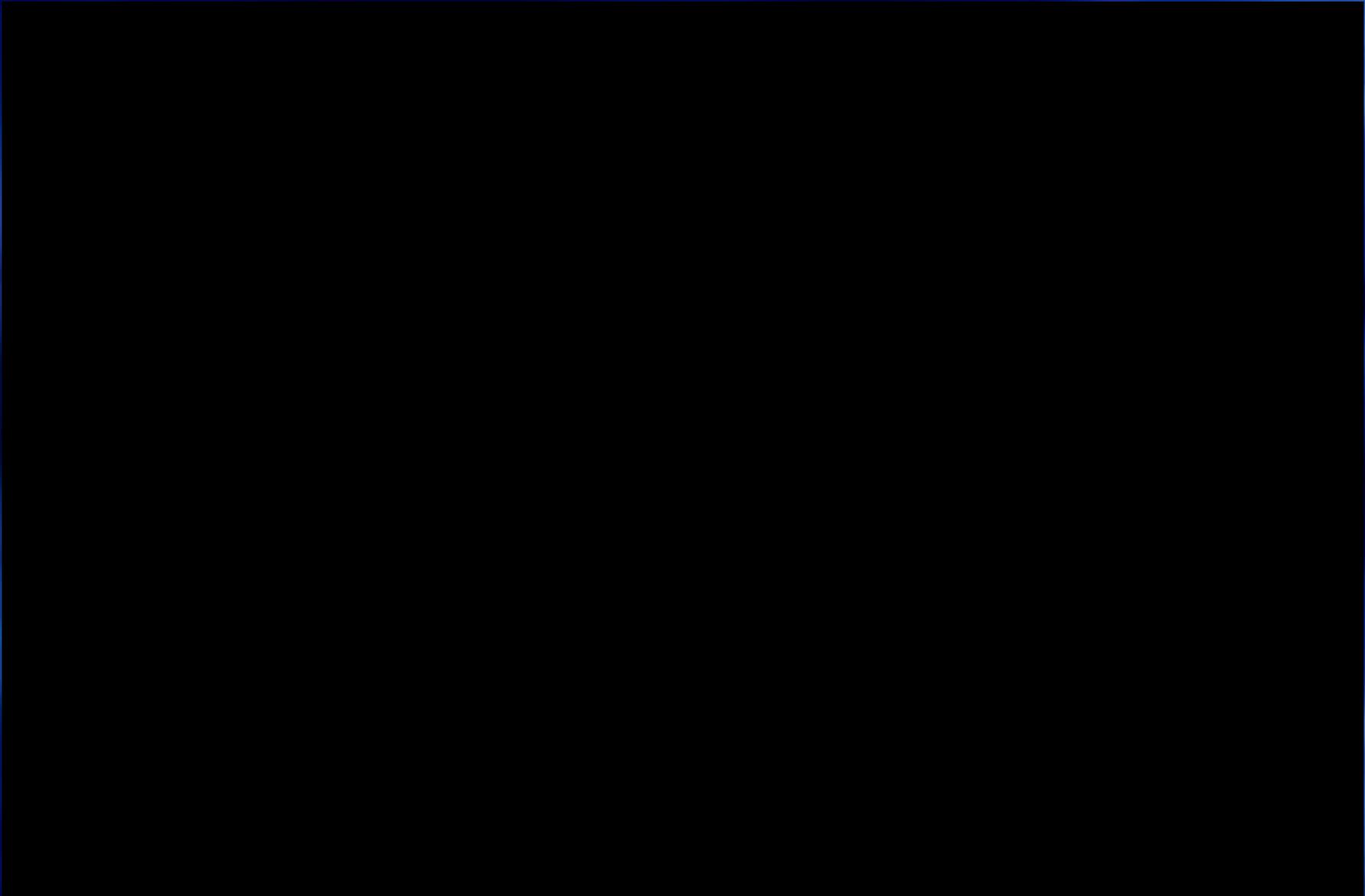
LEVERAGE PERFORMANCE AT LIMITS OF SCALING AND INTEGRATION

EXPLOIT UNTAPPED REGIONS OF THE SPECTRUM

INTERACT INTELLIGENTLY WITH THEIR ENVIRONMENT







30 second intro will be provided on BETA Tape



Consumer Electronics



PM Montage will be provided on BETA Tape





Ending will be provided on BETA Tape

